

Amendment and Response
Serial No.: 09/888,943
Confirmation No.: 9282
Filed: 25 June 2001
For: RESPIRATOR VALVE

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Amendments to the Claims

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

1-14. (Canceled)

15. (Currently Amended) A respirator having a unidirectional valve, comprising:
a face mask having at least one opening for receiving a unidirectional valve; and
a unidirectional valve comprising:

a valve body including a frame, a valve opening through the frame, and a valve seat extending from the frame and at least partially surrounding the valve opening; and

a valve flap having a first portion attached to the frame and an adjacent second portion free to move from a first position where the second portion is in contact with at least a part of the valve seat to a second position where at least part of the second portion is spaced from the valve seat, wherein the valve flap has a contour shape, and further wherein at least a portion of the contour shape of the valve flap is at least partially flattened when the valve flap contacts the valve seat;

wherein the valve flap further comprises a top surface, a bottom surface, and at least one support element extending from the top surface of the valve flap, wherein the at least one support element provides the contour shape of the valve flap.

16. (Original) The respirator of claim 15, wherein the face mask is formed of a filtering material.

17. (Original) The respirator of claim 15, wherein the unidirectional valve is an exhalation valve.

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18. (Original) The respirator of claim 15, wherein the unidirectional valve is an inhalation valve.
19. (New) The respirator of claim 15, wherein the valve flap comprises a plurality of support elements, wherein each of the plurality of support elements is spaced from each adjacent support element.
20. (New) The respirator of claim 15, wherein the valve flap further comprises a first side spaced from a second side, and wherein the valve contour varies between the first and second sides.
21. (New) The respirator of claim 19, wherein the valve flap has a compound curvature.
22. (New) The respirator of claim 15, wherein the valve flap further comprises a first end spaced from a second end, and wherein the valve contour varies between the first and second ends.
23. (New) The respirator of claim 15, wherein the valve seat is generally planar and the valve flap has a curvature that causes a bias of the valve flap toward the valve seat to provide a seal between the valve flap and the valve seat.
24. (New) The respirator of claim 23, wherein at least a portion of the curvature of the valve flap is at least partially flattened when the valve flap contacts the valve seat.
25. (New) The respirator of claim 15, wherein the bias of the valve flap toward the valve seat is sufficient to provide a seal between the valve flap and the valve seat in any orientation of the unidirectional valve.

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26. (New) The respirator of claim 15, wherein the frame of the valve body includes an angled portion adjacent the valve seat.
27. (New) The respirator of claim 15, wherein the valve flap is removably attached to the valve body.
28. (New) A respirator having a unidirectional valve, comprising:
a face mask having at least one opening for receiving a unidirectional valve; and
a unidirectional valve comprising:
a valve body comprising a valve opening; and
a valve flap having a first portion attached to the valve body and an adjacent second portion that seals the valve opening, wherein the valve flap has a curvature from the first end to the second end when the valve flap is not attached to the valve body, and further wherein at least a portion of the curvature of the valve flap is at least partially flattened when the valve flap seals the valve opening.
29. (New) The respirator of claim 28, wherein the valve opening is generally planar, and wherein the valve flap curvature biases the valve flap toward the valve opening when the valve flap is attached to the valve body to seal the valve opening.
30. (New) The respirator of claim 28, wherein the valve flap curvature biases the valve flap toward the valve opening to seal the valve opening, and wherein the bias of the valve flap toward the valve opening is sufficient to seal between the valve opening in any orientation of the unidirectional valve.

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31. (New) The respirator of claim 28, wherein the curvature in the valve flap comprises a constant curvature from the first end to the second end.
32. (New) The respirator of claim 28, wherein the curvature in the valve flap varies from the first end to the second end.
33. (New) The respirator of claim 28, wherein the face mask is formed of a filtering material.
34. (New) The respirator of claim 28, wherein the unidirectional valve is an exhalation valve.
35. (New) The respirator of claim 28, wherein the unidirectional valve is an inhalation valve.
36. (New) The respirator of claim 28, wherein the valve flap further comprises a top surface, a bottom surface, at least one support element extending from the top surface of the valve flap, and wherein the at least one support element provides the curvature in the valve flap that is at least partially flattened when the valve flap seals the valve opening.
37. (New) The respirator of claim 28, wherein the valve flap further comprises a top surface, a bottom surface, wherein the valve flap further comprises a plurality of support elements extending from the top surface, wherein each of the plurality of support elements is spaced from each adjacent support element, and wherein the plurality of support elements provide the curvature in the valve flap that is at least partially flattened when the valve flap seals the valve opening.

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38. (New) A respirator comprising:
a face mask comprising an opening formed therethrough; and
a unidirectional valve located over the opening in the face mask, the unidirectional valve comprising a valve flap attached to the face mask over the opening, the valve flap comprising a curvature from a first end to a second end when the valve flap is not attached to the face mask, wherein the curvature of the valve flap is at least partially flattened when the valve flap seals the opening in the face mask.
39. (New) The respirator of claim 38, wherein the at least partially flattened curvature of the valve flap creates a bias that is substantial enough to keep the valve flap sealed over the opening in all orientations.
40. (New) The respirator of claim 38, wherein the curvature of the valve flap comprises a constant curvature.
41. (New) The respirator of claim 38, wherein the curvature of the valve flap varies from the first end to the second end.
42. (New) The respirator of claim 38, wherein the opening is generally planar such that the curvature of the valve flap attached to the face mask over the opening is flattened when the valve flap seals the opening in the face mask.
43. (New) The respirator of claim 38, wherein the face mask is formed of a filtering material.
44. (New) The respirator of claim 38, wherein the unidirectional valve is an exhalation valve.
45. (New) The respirator of claim 38, wherein the unidirectional valve is an inhalation valve.

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46. (New) The respirator of claim 38, wherein the valve flap further comprises a top surface, a bottom surface, and at least one support element extending from the top surface of the valve flap, wherein the at least one support element provides the curvature in the valve flap that is at least partially flattened when the valve flap seals the opening.

47. (New) The respirator of claim 38, wherein the valve flap further comprises a top surface, a bottom surface, wherein the valve flap further comprises a plurality of support elements extending from the top surface, wherein each of the plurality of support elements is spaced from each adjacent support element, and wherein the plurality of support elements provide the curvature in the valve flap that is at least partially flattened when the valve flap seals the valve opening.